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HISTORY OF A CASE OF REMOVAL OF A RETRO-BULBAR LYMPHOSARCOMA WITH PRESERVATION OF NORMAL VISION.¹

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On January 11, 1899, F. K., a weaver, 57 years old, applied at my clinical service at Wills' Hospital. He gave the following history: He was born in Germany. His health was good until 21 years of age. At that time a swelling termed a "goiter" by some government surgeons slowly developed in his neck. The enlargement became so great in size that he was rejected from military service. It was unaccompanied by exophthalmos, tachycardia, or any vasomotor symptoms, and gradually disappeared in about 16 years.

He had a chancre on the glans penis 26 years before I saw him. This lasted some five or six weeks, and was repeatedly cauterized, but was not followed by any glandular enlargements, skin-eruptions, or alopecia. Six years after this he began to complain of occasional diplopia.

Many years ago, possibly about 20, he went to Wills' Hospital for glasses, though he does not remember the exact date of the visit nor the name of the attending surgeon.

In 1887 his eyes were examined by Dr. A. G. Heyl at the Hospital of the Protestant Episcopal Church in Philadelphia. Dr. Heyl informed him that "a small vessel which would eventually give him trouble was developing in his right eye."

He again sought advice at Wills' Hospital 12 years later and became a patient of Dr. S. D. Risley. Study of the notes of the case in Dr. Risley's records shows that vision in each eye was brought to practically normal by a convex spherocylinder lens placed before the right eye and a convex spherical lens before the left one. At that time he complained of an intense pain in the right side of the head and in the right eye. This, he said, dated back for some three weeks, and had been produced by catching cold. At that time tension in each eye was normal. The right eye was congested. Its cornea was sensitive, and its iris responded to

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light-impulse and efforts for accommodation. The rims of the crystalline lenses were noted as being opaque, and there were four degrees of homonymous diplopia for distance.

For five years before I saw him, he had noticed a "ringing at night in the ears," this having gradually lessened. He never complained of dizziness.

Three years before his first visit he suffered from an attack of gonorrheal urethritis. A year after this he had a slight fall followed in six months' time by a prominence of the right eye. About three months before he came to the clinic he noticed that he could feel a swelling above the same eye.

He said that 8 days before he had applied to the clinic he had consulted Dr. T. B. Schneidemann of this city, who informed him that he was suffering from an orbital growth, and advised him to go to Wills' Hospital for operation.

A photograph taken when he was 20 years of age showed a swelling in his neck, which was more marked on the right side. There was not any appearance of exophthalmos. The palpebral fissures were apparently of the same size. Another photograph taken in a group some 18 years later was unfortunately so positioned as to make the patient face the direct sunlight. In it some spasm of the left orbicularis palpebrarum associated with an elevation of the left angle of the mouth could be determined, both expressions probably having been caused by the impingement of the direct rays of the sun upon the parts. In a third photograph sat for only 5 or 6 years before he came to the hospital, the neck appeared normal. The right palpebral fissure was a trifle wider than its fellow, and there was no exophthalmos. A fourth photograph taken in a badly placed and too brilliantly lighted group some three years after the third one, exhibited a similar character of facial distortion as was seen in the second picture. In it there did not seem to have been any exophthalmos present.

At the time of the first examination it was found that the affected organ projected markedly forwards and downwards, its corneal summit being 6 mm. in advance of its fellow and 3 mm. lower. The conjunctival vessels, particularly the bulbar, were injected and swollen. Above the globe there was a rather deeply seated and freely movable mass of tissue giving a sensation to the finger-tips as though it were composed of a series of underlying swollen and twisted bloodvessels. At times, this tumor-mass seemed to pulsate synchronously with the aortic beat. Carefully repeated examination, however, failed to evidence any thrill, though an unmistakable bruit could be occasionally heard in the orbit and in the temporal region. There did not seem to be any projections or deformities in the osseous parts. Von Graefe's and Stellwag's signs were undeniably present.

The pupil of the affected side was 2.5 mm. in size, and oval, with its long axis at 80°. There were a number of

equatorial striae in both the anterior and posterior cortices of the crystalline lens. The optic disc was 7 by 8 diameters in its apparent magnitude, and its long axis was situated at 80°. The edges of the disc were everywhere hazy, though a broad scleral ring with an absorbing conus beyond could be fairly well seen. The disc substance was dirty dull red-gray in tint and there was an excentrically situated physiologic excavation. Both the retinal veins and arteries were much reduced in size, the former being exceedingly tortuous. The usual light streak along the vessels could not be determined after most careful examination. There was not any spontaneous arterial pulse, though a slight venous pulsation could be determined at times. The chorioid was quite granular, but did not evidence any signs of gross inflammation. There was a marked astigmatism, the fine retinal vessels at the long axis of the disc being most plainly seen with a convex lens of five diopters' power.

The pupil of the left eye was the same size as its fellow, its long axis being at 70°. With the exception of a few striae in the anterior and the posterior cortex of the crystalline lens, the media were clear. The optic nerve head was 7 by 8 diameters in apparent size, with its long axis situated at 80°. There was a broad scleral ring to the outside of the nerve head with a narrow one in. Annular pigmentation could be plainly seen. The currents of the retinal arteries were somewhat narrowed, although the retinal veins were not tortuous. The ordinary light streak along the main retinal vessels was quite manifest.

The iris of the left eye reacted more freely to light-stimulus and accommodation than its fellow, while varying degrees of exophoria during both near and far vision could be determined at times; particularly in the lower portions of fields of vision.

Uncorrected vision with the right eye equalled about $\frac{1}{4}$ of normal, while that with the left was $\frac{1}{8}$. Both the accommodative regions and powers in each eye were proportionate to the character and the degrees of refraction error and age. There was a marked astigmatism with hypermetropia and presbyopia.

The fields of vision for white, red, and green were normal. The field of fixation was quite large and well shaped.

General physical exploration and study of the blood made by Dr. Joseph Sailer, of Philadelphia, was practically negative. There was not the slightest evidence of any gross organic disturbance, the signs of Hodgkin's disease being most carefully and assiduously sought for. Dr. Sailer's report in full is as follows:

"Muscular system well developed. Skin sallow. Mucous membranes good color. No scars or marks upon the body. None of the lymphatic glands can be palpated through the skin. The spleen is apparently large in size.

The liver can be felt one finger's breadth below the border of the ribs and extends above to the sixth rib. The heart-dulness commences superiorly at the upper border of the fourth rib at the mid-sternum and passes to one inch to the right of the left nipple line. The apex beat is indistinctly felt in the fifth interspace in the nipple line. On auscultation there is a reduplication of the first sound at the apex, which persists with a slight roughness as the stethoscope is placed at higher levels. The second sound is somewhat roughened in the third interspace. The second aortic sound is louder than the second pulmonic. The first sound in the fifth interspace to the right of the sternum is loud, clear, and resonant.

"There is distinct pulmonary expansion at the liver border although posteriorly, at the apex, no expansion can be felt by percussion. On auscultation there is prolongation of the expiration at both apices. This is less distinct towards the base; otherwise the pulmonary sounds are clear.

"By percussion there appears to be a mass giving a tympanitic note extending two inches below the ribs of the left side, and about one inch to the right of the median line, which probably represents the stomach. Palpation and percussion of the abdomen is otherwise normal.

"There are no pareses nor any gross disturbances of sensation. The right bicipital and corresponding tricipital reflexes are slightly increased. There is considerable myotonic irritability. The tendon-reflexes of the left arm cannot be elicited, though the myotonic irritability is similar to that on the right side. The thoracic and abdominal reflexes are prompt. The cremasteric reflex is very pronounced on both sides. The kneejerks are exaggerated. There is a distinct patellar tendon-reflex on each side. The Achilles tendon-reflex cannot be distinctly obtained. There is no ankle-clonus.

"Examination of the blood shows that the red blood-cells are of normal size and shape, and stain distinctly. There is about a normal proportion of white blood-cells with the following differential count: Polymorphonuclears, 64%; small lymphocytes, 29%; large mononuclears, 5%; and degenerated cells about 2%. No eosinophilic or basophilic cells were present."

Both chemic and microscopic examination of the urine failed to reveal the presence of anything abnormal in this excretion.

In other words, aside from a slight alteration in the heart, which was probably due to a commencing atheroma of the valves, and an emphysema of the apices of the lungs, the general physical examination was negative.

After a fair trial of medicinal agents, including the administration of large doses of arsenic, I performed the following operation for the removal of what I felt certain was a postocular growth. A circumlinear incision following the

line of the upper orbital margin and extending nearly the entire length of the superior palpebral fold was made in the upper eyelid just above its sulcus. The underlying tissues were freely dissected until the finger tips could be gotten into the extraocular muscle cone, care being taken to avoid injuring the fibers of the levator muscle.

In this position a multilobular mass which was composed of four distinct parts could be plainly felt. The largest lobe extended into the upper inner angle of the orbit, and the entire mass was connected with a peduncle which arose from the outer side of the lobe outside of the funnel, and passed directly back to the apex of the orbit.

These masses were extirpated by means of the finger tips, scissors, and flushings of 1 to 4,000 bichlorid of mercury. The operative field was freed from all useless and ragged tissue, cleansed, and dried. The surface-wound was coated with 6 superficially placed iron-dyed black silk sutures. The conjunctival sac was cleaned with sterile water and a few drops of a 1% solution of atropin were dropped on the corneal surface. The field of operation was covered with a single figure-of-eight gauze bandage. The patient was placed in bed and iced compresses were applied on the bandage for the first 24 hours.

The specimens were given to Dr. Edward A. Shumway, in charge of the Eye Department of the Pathological Laboratories of the Philadelphia Polyclinic and School for Graduates in Medicine.

The stitches were removed on the second day, and as there had not been any postoperative reaction, the patient was given indoor liberty. A marked ptosis with almost complete want of action of the palpebral levator ensued, while examination of the extraocular muscle-balance at this early period showed but a 2.5° of exophoria at 6 meters' distance. Corrected vision in each eye was almost normal. In 10 days' time the ptosis had somewhat diminished, the patient being able to lift the upper lid some 2 or 3 millimeters. In less than a month, without the employment of any form of treatment, the eyelid operated upon could be kept lifted so well that its ciliary border was kept almost constantly on a level with that of its fellow—the closest scrutiny being necessary to distinguish any difference between the widths of the two palpebral fissures.

Examination of vision and refractive error, 4, 8, and 12 months later, gave normal results. The double vision had been quite persistent and most variable,

necessitating at first, though at present to a much less degree, the employment of a shade before one eye during any attempts for near work.

At present writing, nearly 18 months after the operation, there has not been any return of the growth, the patient being well, and daily employed at his livelihood.

The pathologic and microscopic report of the orbital growth was practically as follows:

The specimens which exhibited similar macroscopic appearances consisted of 6 pieces, 2 of which were large and 4 small. The large ones were evidently a part of one mass. Together they measured 4 cm. in length, by $2\frac{1}{2}$ cm. in breadth, and $\frac{1}{2}$ cm. in thickness. They were imbedded in celloidin, and the sections were stained with hematoxylin and eosin.

Examination with the microscope showed the tumor to consist mainly of a dense mass of closely-packed, round, fascicular nuclei. The cell-bodies were indistinct. In places there were broad bands of connective-tissue that stained deeply with eosin. In some portions of the growth aggregations of large endothelial cells with distinct protoplasm and pale, round or oval nuclei could be seen. Many of these were associated with bloodvessels, though in a few situations they were collected into clumps without the presence of red blood-cells. The vessel-walls were somewhat thickened and exhibited a tendency to hyaline change. There were neither aggregations of true lymphocytes nor evidences of karyorrhexia in the nuclei.

A carefully conducted detailed local and general re-examination of the patient at the present writing fails to show the slightest evidence of any local return of the growth or the least appearance of any metastasis. With the exception of an almost infinitesimal degree of nondisturbing diplopia in the lower field of vision during near-work, the gross local signs have ceased. The patient is apparently healthy in every respect and is employed many hours daily as a weaver.

Remarks.—This case is one of some interest. Occurring in a goitrous subject free from any other sign of Hodgkin's disease, and with the history of acquired syphilis, the tumor furnished the ordinary symptoms of exophthalmos with bulbar displacement; mechanical and functional limitation of mobility of the eyeball; diplopia; contraction of the retinal arteries; and

engorgement of the retinal and conjunctival veins. In fact, most, if not all, of the pressure-symptoms of a retrobulbar growth.

The tumor successfully extirpated without injury to the eyeball or its functioning power, merely giving rise to temporary disturbance of the contiguous muscular structures, serves to illustrate the average results of ophthalmic surgery of today.

The findings of the microscope, which necessarily are indeterminate as to such growths being truly sarcomatous or lymphomatous in character, taken into consideration with the multilobular nature of the mass, distinctly point to its being a lymphosarcoma.

The lapse of time since the removal of the growth without the least signs of any local or metastatic expression of the former disease, although, of course, of too brief a period for any certainty of conclusion, is of much importance in showing that the growth was not malignant in character, while the return of the organ to its original healthy condition is a result which must be considered as most fortuitous.

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